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DNA 940906.128

Operation UPSHOT-KNOTHOLE

NEVADA PROVING GROUNDS

PRELIMINARY REPORT

SUMMARY REPORT OF THE TECHNICAL DIRECTOR

Programs 1 – 9

RESTRICTED DATA

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HEADQUARTERS FIELD COMMAND, ARMED FORCES SPECIAL WEAPONS PROJECT
SANDIA BASE, ALBUQUERQUE, NEW MEXICO

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SECURITY INFORMATION

WT-56-0700

shielding, suggests that in terms of the effects radii of other damaging nuclear phenomena primary blast injury may not be of important military consequence.

9.5 FLASH BLINDNESS

Men looked at the initial flash of an atomic bomb with the dark-adapted eye for the period of the blink reflex through red filters which screened out most of the visible and infrared radiation except that between 600 and 680 millimicrons. A total of 55 exposures was made on five shots at distances ranging from 7 to 14 miles. In no instance did the men receive retinal burns from these exposures and the vision recovery time for reading red-lighted aircraft instruments after the exposures averaged about 20 sec. This vision recovery time is probably about 25 per cent less than that which would have been required had exposure been made without filters. Thus the filters offered adequate protection against retinal burns under the conditions of these experiments and reduced appreciably the time required to read aircraft instruments under standard conditions of illumination at night. This type of filter is considered useful for wear as protection for the vision of aircraft crew members in those situations where it may be anticipated that an atomic flash might be viewed at night at distances of a few miles.

In dark-adapted rabbits, unprotected by filters, exposed to the flash of an atomic bomb, burns of the retina were obtained at distances from 2 to 28.5 miles with three possible but questionable burns being obtained at 42.5 miles. This does not mean that the retina of man would necessarily be burned by the flash at these distances. However, retinal burns have sometimes occurred in man on unprotected exposure to the flash at 10 miles or less and retinal burns at greater distances are considered to be entirely possible.

One source of reasonably good data on this problem would seem to be the accidental visual exposures to the flash which take place occasionally on nearly every series of atomic bomb tests. This source of information has so far been neglected but it is felt to be entirely feasible to establish a procedure for examination and recording of each case of accidental human exposure to the flash so that eventually a reasonable series of cases could accumulate from which some valuable conclusion might be drawn.